

**METHOD AND APPARATUS FOR PRESERVING PRECISE EXCEPTIONS IN BINARY TRANSLATED CODE****ABSTRACT OF THE DISCLOSURE**

The present invention provides a system and method for determining the cause  
5 of an exception and for reliably handling precise exceptions in a computer system that  
executes a plurality of operations in parallel. Binary compilation techniques are used to port  
code from a foreign architecture to a host architecture but in order to exploit the parallelism  
of the host processor architecture in binary translated code, the code must be optimized by  
extracting the inherent parallelism of the foreign code while maintaining precise exceptions.  
10 Because the optimization process violates precise exception order, the host computer system  
uses a speculative mode of execution whereby the host computer system puts a speculative  
value into the destination register. To denote that a speculative value is stored in the register,  
an additional bit is associated with every host register to indicate that the operand is  
speculative. It is only after the speculative value is consumed by an operation in non-  
15 speculative mode, that a real exception will be invoked. The method and apparatus of the  
present invention further preserves the data and conditions that gave rise to the exception.  
The present invention minimizes the time to recover from an exception by minimizing the  
side effects that must be handled to recover from exceptions but extracts performance  
improvements associated with executing operations in parallel while achieving precise  
exception maintenance.  
20

SF 1214463 v1